



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00002YS

This is to certify:

That

Apco Pipe Fittings Co., Ltd
No. 50, Shiji Road South, Xishi Area Free Trade Pilot Zon Yingkou 115004,
Liaoning Province,
China

is an approved manufacturer of
Steel Forgings

in accordance with
DNV rules for classification – Ships
DNV-OS-B101 – Metallic materials

and the following particulars:

Application area	Forgings for boilers, pressure vessels and piping systems
Steel type(s)	Stainless steel forgings Carbon and carbon-manganese, Alloy, Austenitic stainless
Forging method	See page 2
Max. weight	See page 2
Heat treatment condition	See page 2

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules.
Materials to be applied to DNV classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Hamburg** on **2022-04-19**

for **DNV**

This Certificate is valid until **2025-04-18**.

DNV local station: **Dalian NB & CMC**

Approval Engineer: **Andreas Koch**

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Thorsten Lohmann
Head of Section

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: AM 311

Revision: 2021-03

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Particulars of the approval

Forgings for boilers, pressure vessels and piping systems ³⁾ Ferritic steel forgings for low temperature service

Steel type	Grade ³⁾	Forging method ¹⁾	Max. weight [kg]	Max. diameter / section [mm]	Heat treatment condition ²⁾
C and C-Mn	VL F450H, VL F490H	CD	1 300	150	N

Stainless steel forgings ³⁾⁴⁾

Steel type	Grade	Forging method ¹⁾	Max. weight [kg]	Max. diameter / section [mm]	Heat treatment condition ²⁾
Austenitic	CrNi	CD	1 300	150	SHT
	CrNiMo	CD	1 300	150	SHT

Steels acc. other standards ³⁾

Grade	Standard	Forging method ¹⁾	Max. weight [kg]	Max. diameter / section [mm]	Heat treatment condition ²⁾
Carbon and carbon-manganese					
-	ASTM A105	CD	1 300	150	N
LF2 class 1	ASTM A350	CD	1 300	150	N
Austenitic stainless					
F316/316L	ASTM A182	CD	1 300	150	SHT

Remarks:

- 1) CD: Closed die forging
- 2) N: Normalized
 QT: Quenched and tempered
 NT: Normalised and tempered
 SHT: Solution Heat Treated (Solution Annealing)
- 3) Incl. equivalent grades in acc. to other standards
- 4) Stainless steel forgings shall be in accordance with recognized standards, e.g. EN 10222, ASTM A473/A965/A1049 and JIS G 3214, provided that supplementary requirements contained herein are also met. Recognition of other standards is subject to submission to the Society for evaluation.